RISK, ISSUE, AND OPPORTUNITY MANAGEMENT

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February 18, 2016

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QUOTES FROM AT&L

- **Our task as managers involves optimization—what are the highest-payoff risk-mitigation investments we can make with the resources available?**
- **I expect our managers to demonstrate that they have analyzed this problem and made good judgments about how best to use the resources they have to mitigate the program's risk.**

From the Under Secretary of Defense for Acquisition, Technology, and Logistics

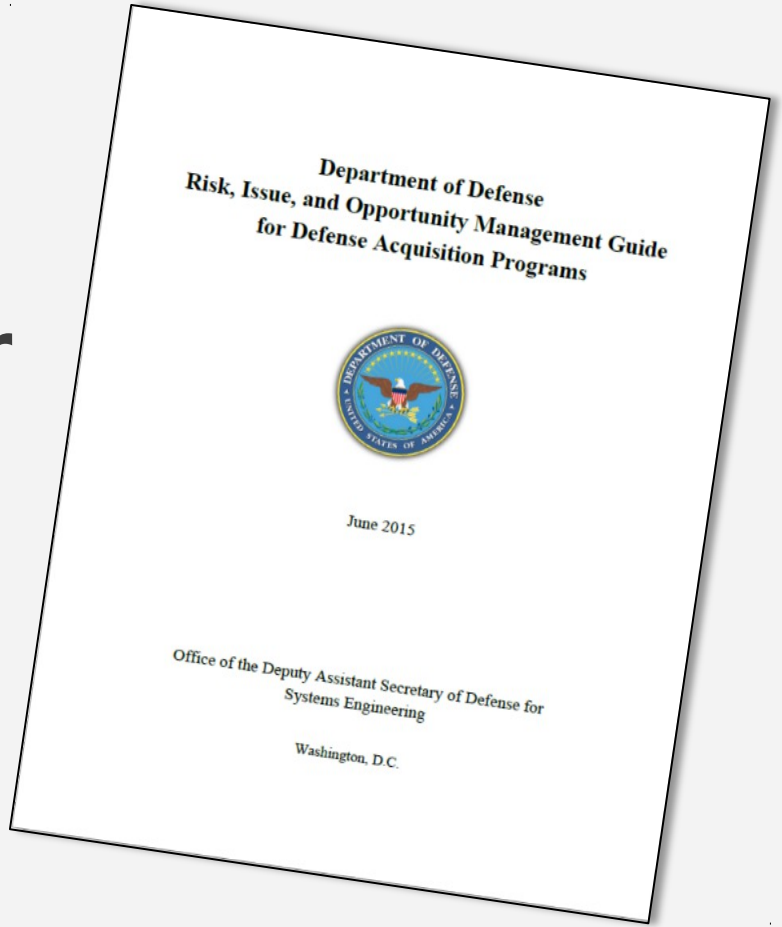
Risk and Risk Mitigation—Don't Be a Spectator

Frank Kendall

NEW GUIDE

Risk, Issue, and Opportunity Management Guide for Defense Acquisition Programs: June 2015

Significantly different from DoD Risk Management Guide Version 6.0, 2005


Department of Defense
Risk, Issue, and Opportunity Management Guide
for Defense Acquisition Programs
June 2015
Office of the Deputy Assistant Secretary of Defense for
Systems Engineering
Washington, D.C.

OVERVIEW

DoD Risk Management Guidance Risk Management

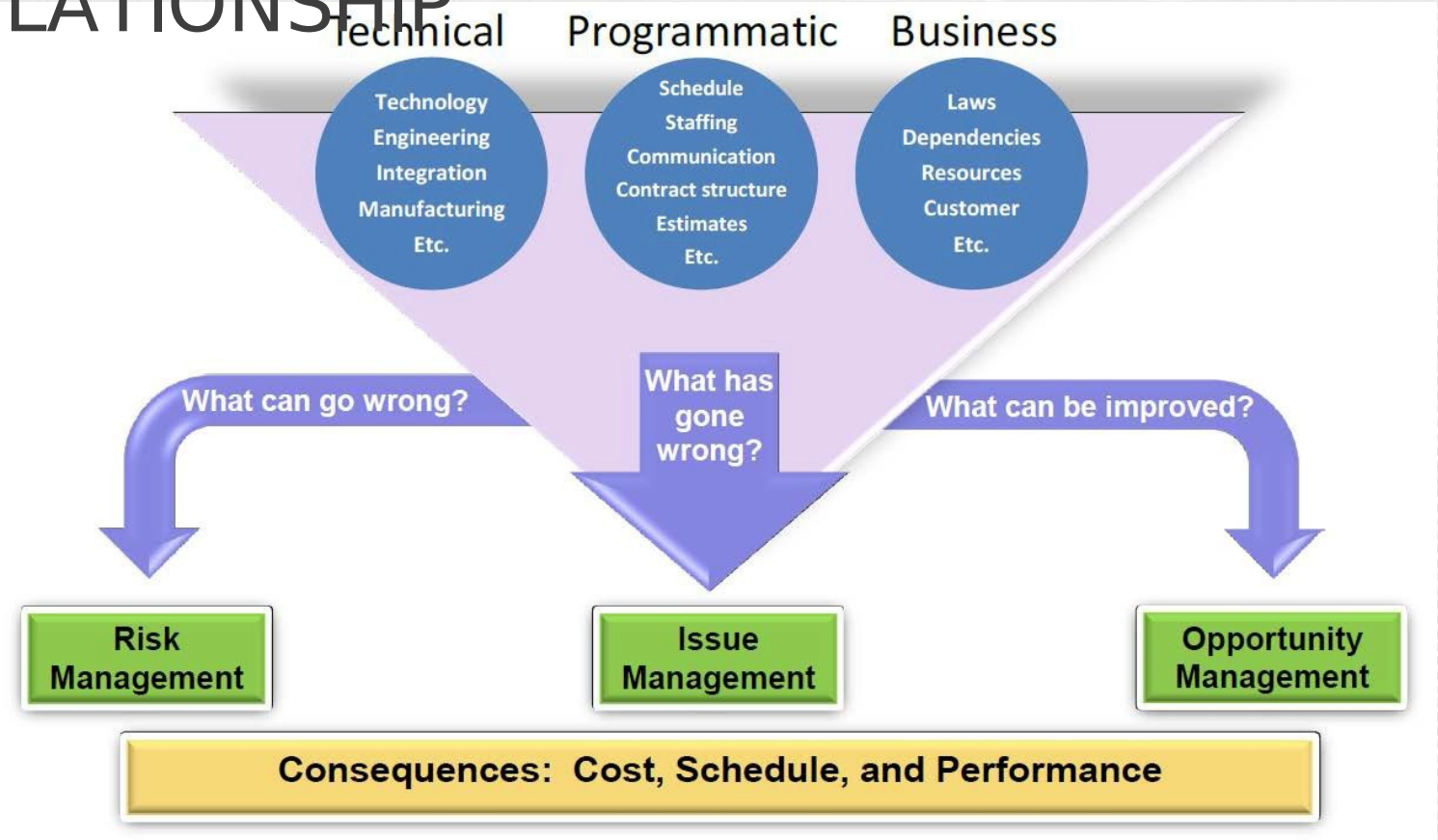
- Risk Planning
- Risk Identification
- Risk Analysis
- Risk Handling
- Risk Monitoring

Issue Management

Opportunity Management

DAU Risk Management

RISK, ISSUE, AND OPPORTUNITY RELATIONSHIP



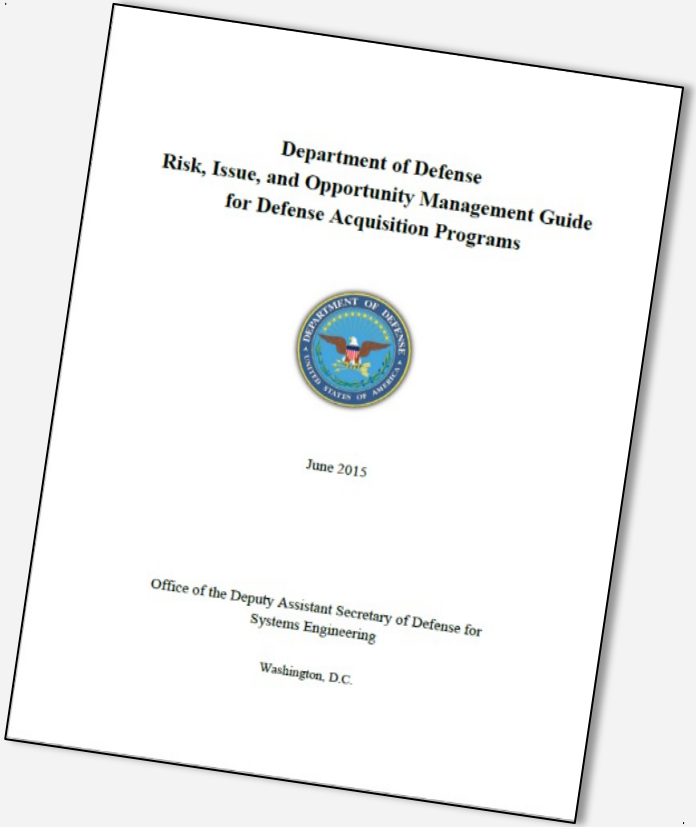
RISK, ISSUE, OR OPPORTUNITY?

RISK or ISSUE ?

RISK
or
ISSUE
?

GUIDE CONTENT

Section 1: Scope and changes
Section 2: Planning & documentation. Section 3: Risk management process
Section 4: Integration with other program management tools
Section 5: Issue Management
Section 6: Opportunity Management
Section 7: Internal and external interfaces. Appendixes: Life Cycle Considerations, Activities, Templates, Roles, Responsibilities & Relationships; Risk Management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“If you don’t actively attack the risks, they will actively attack you.”

Principles of Software Engineering Management **Tom Gilb**

“Bad news isn’t wine. It doesn’t improve with age.”

Colin Powell

“Opportunity is missed by most people because it is dressed in overalls and looks like work.”

Thomas A.

Risk Management Overview

RISK MANAGEMENT OBSTACLES

Culture often precludes risk management

- I know what I'm doing….

Going through the motions vs. an Integral process

- Time for another quarterly brief….

Management and organizations fear risk identification

- It's not my fault
- If I don't know,… then no one can blame me

RISK MANAGEMENT – EVERYONE'S JOB!

Program management

Systems engineering

Requirements definition

Earned value management

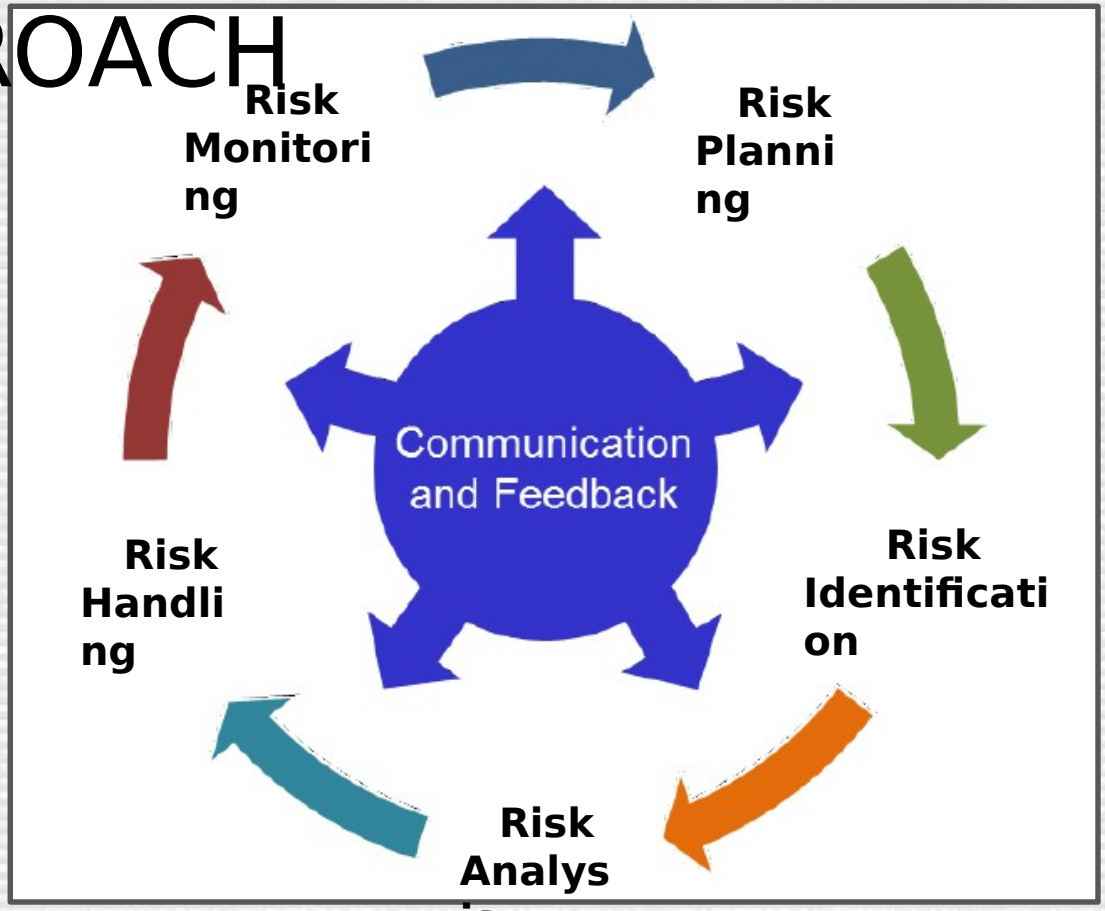
Production planning

Quality assurance

Logistics

…

2015 RISK MANAGEMENT APPROACH



RISK DEFINITION

Risk is the combination of

(1) the **probability** of an undesired event or condition and

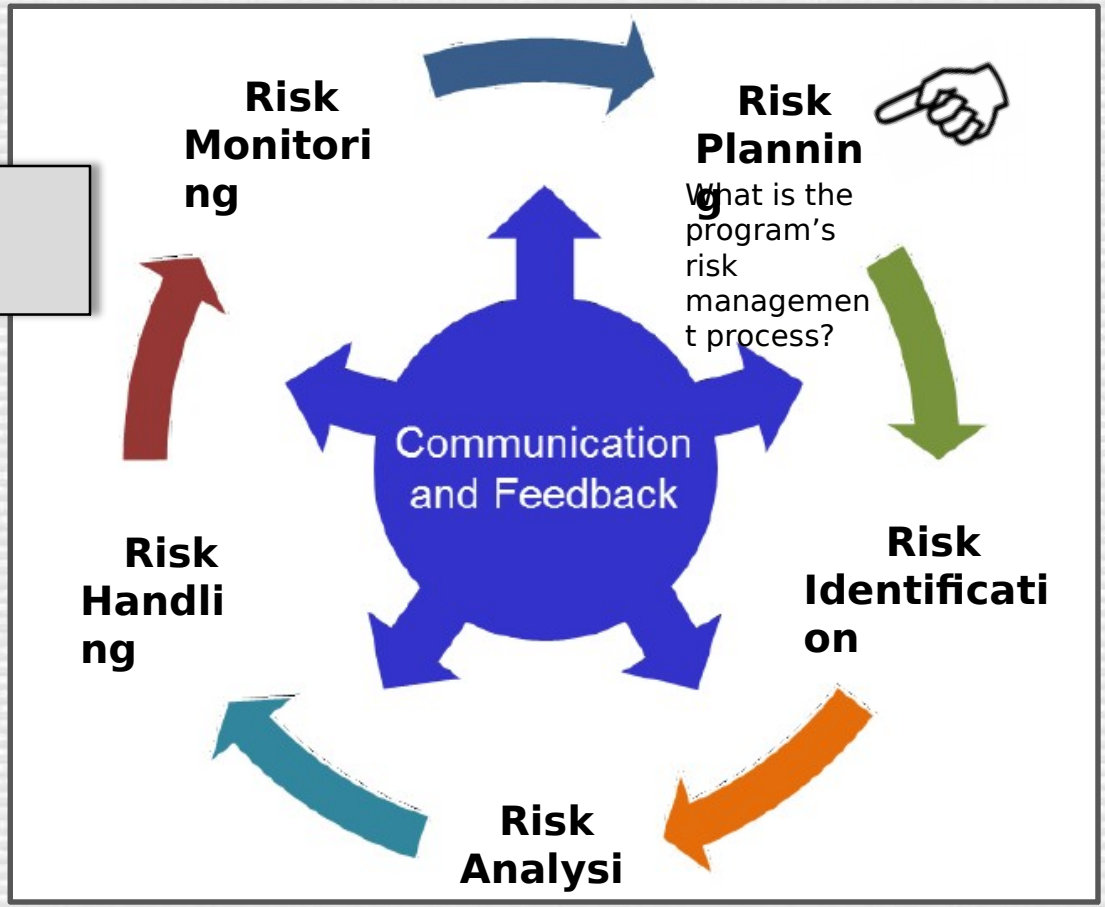
(2) the **consequences**, impact, or severity of the undesired event, were it to occur.

The undesired event may be **programmatic** or **technical**, and either

RISK PLANNING

"Plans are nothing…
planning is everything"

DDE



FRAMING ASSUMPTIONS AND GROUND RULES

Framing Assumptions

- priority of requirements
- schedule dependencies
- accuracy of models and simulations

Ground Rules

- Time frame - risk consequence evaluated as if the risk were to be realized without further mitigation, avoidance, etc.
- Time of risk event - when risk hypothetically will occur
- WBS level - should be ID’d to lowest level possible

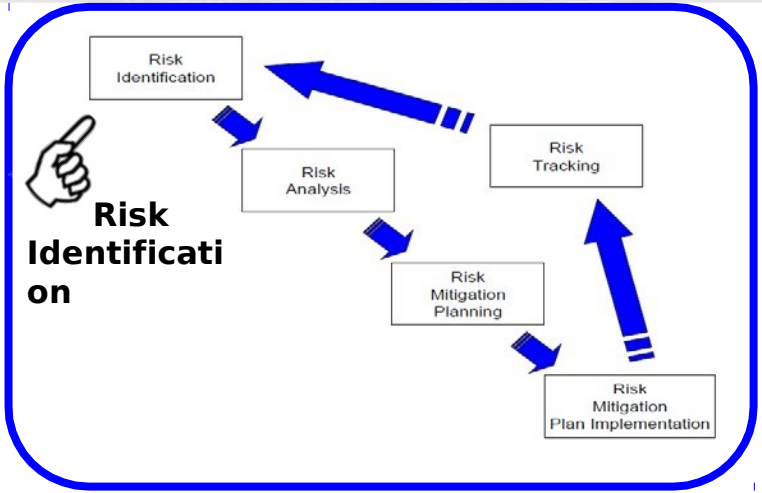
ALIGNING GOVERNMENT AND CONTRACTOR RISK MANAGEMENT

Government PMO, Prime Contractor and associated Subcontractors should employ a consistent Risk Management Process

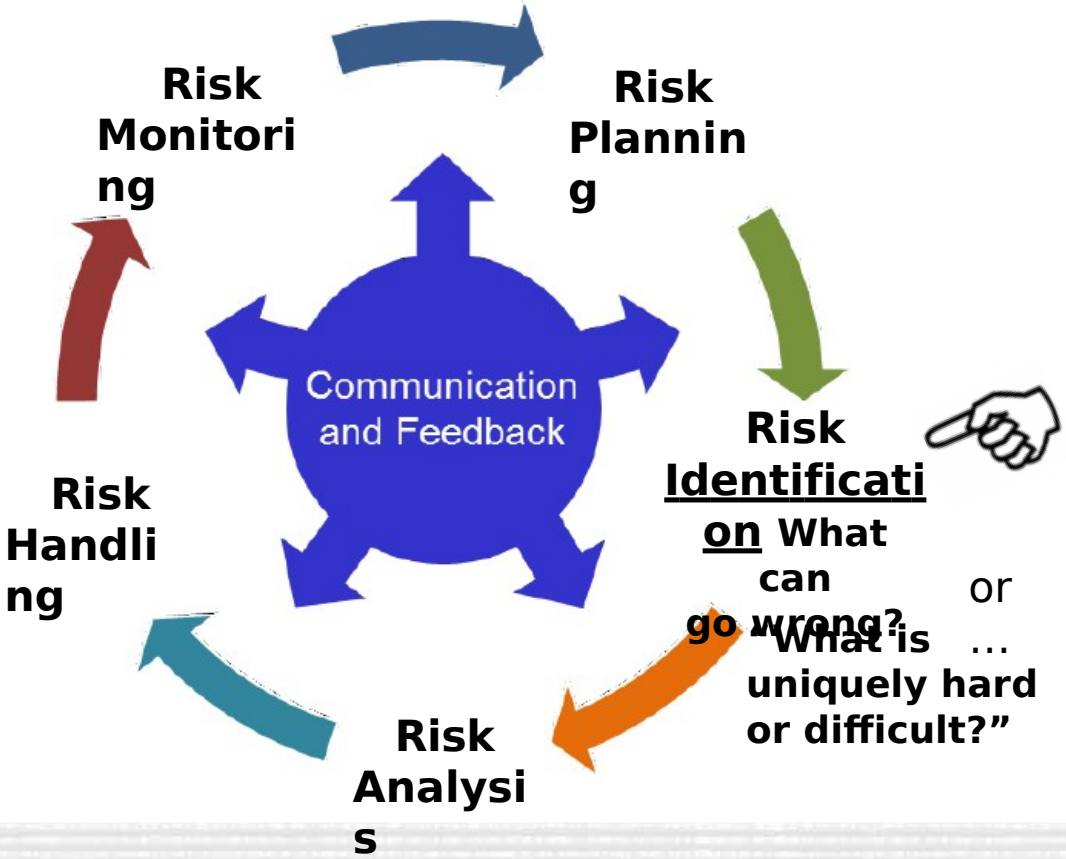
Establish a Joint Risk Management Database Risk Management should be integrated with:

- Requirements Development;
- Design, Integration, and Test (Systems Engineering);
- Planning and Management of System Support and Sustainment;
- Schedule Tracking;
- Performance measurement;
- Earned Value Management (EVM) (when

RISK IDENTIFICATION
IN DOD RMG V6 AND DOD RIOMG MODELS



DoD RMG v6
2005



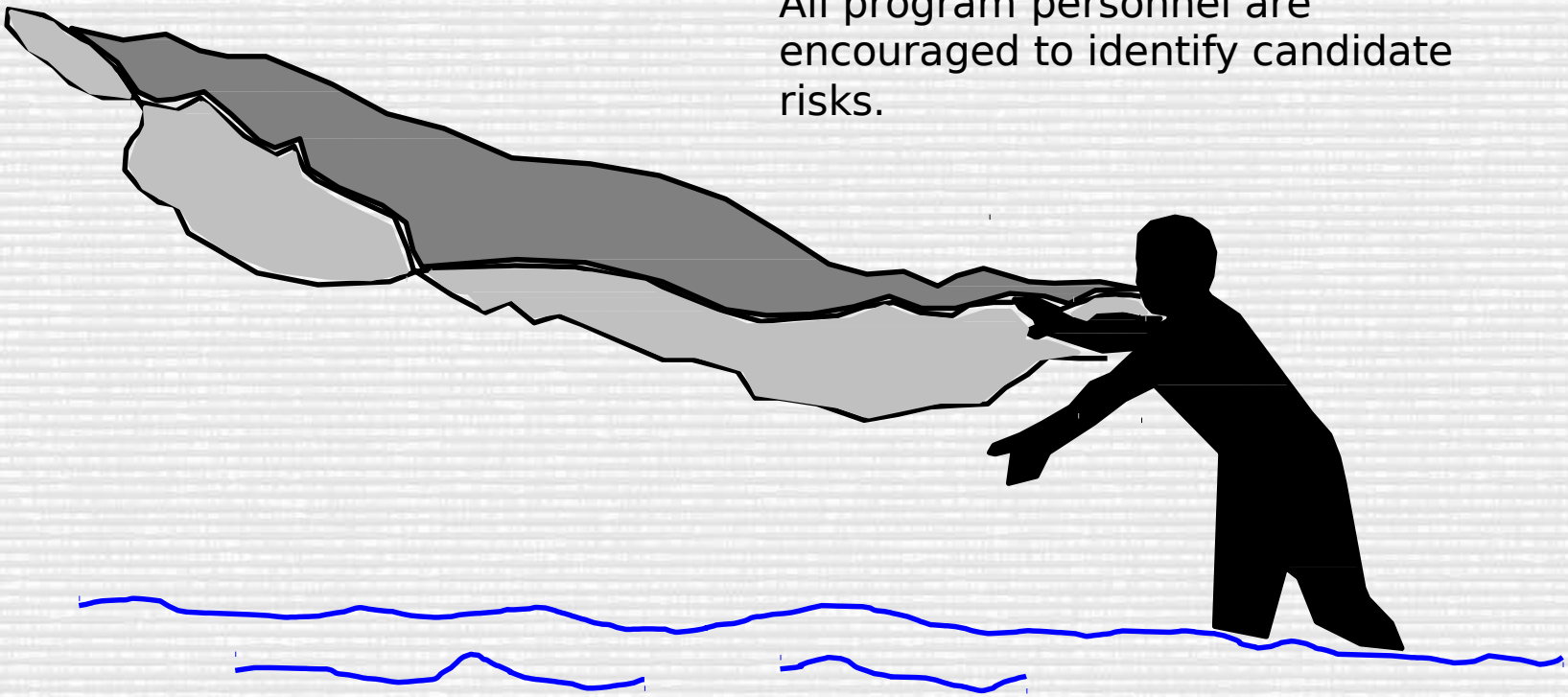
IDENTIFYING RISK:

I cannot imagine any conditions which would cause a ship to founder. I cannot conceive of any vital disaster happening to this vessel. Modern shipbuilding has gone beyond that..."

Captain E.J. Smith, 1906, about the Adriatic (Captain of *Titanic* on the evening

RISK IDENTIFICATION

All program personnel are encouraged to identify candidate risks.



Cast your net wide at first! Do not ignore areas or eliminate ideas early in the process.

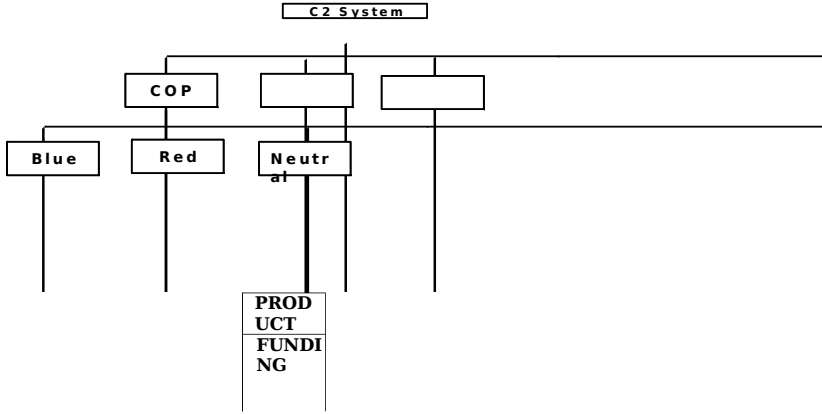
WHEN IDENTIFYING RISKS

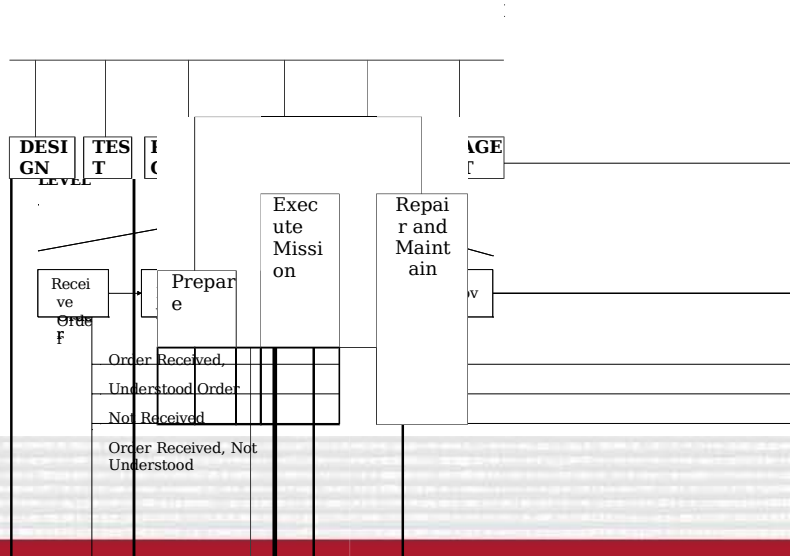
When identifying risks:

- Example risk ID methodologies:
  - Independent assessments
  - SOW requirements
  - Brainstorming sessions with SMEs
  - Interviews with IPT leads, Systems Command/Center competencies
  - Review of similar/historical programs
  - Trade studies
- Review analysis of Technical Performance Measurements, resource data, life cycle cost information, WBS/IMS/EVM data trends, and progress against critical path
- Review Systems Engineering Technical Review Checklists

3 MORE WAYS FOR RISK ID

1. Product based evaluation
   - Uses Work Breakdown Structure
   - Looks at system architecture
   - Identifies program relationships
2. Process based evaluation
   - Focuses on processes used to define, develop and test a system
   - Looks at internal organizational processes
3. Scenario based evaluation
   - Risks from a customer and supplier point of view
   - Requires knowledge of customers and suppliers, or their inputs/time





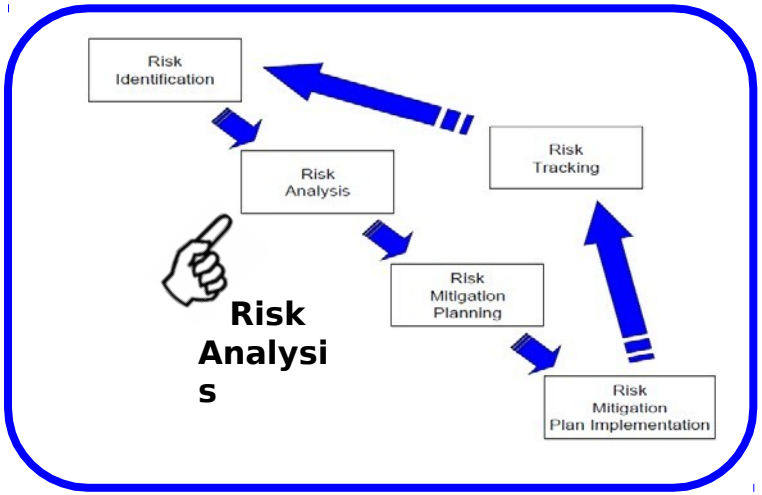
RISK IDENTIFICATION

MUST DRILL DOWN

The project might not:
(deliver some promise) (meet some expectation)

Because:
(some reason)
(some reason)
(some reason)
(some

RISK ANALYSIS

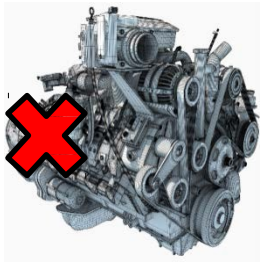


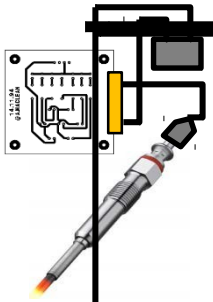
DoD RMG v6
2005

ROOT CAUSE DETERMINATION

We Might Not:

Because:





Why ?

Meet Availability Requirements

Why ?

Engine Does Not Start

Why ?

Glow Plug Failure

Why ?

Glow Plug Remains On After Start

Why ?

Counterfeit Circuit Boards

ROOT RISK EVENT

If

Some negative event occurs

Purchase Counterfeit ards

“Root Risk Event”

Then

Something bad may result

Series of Events

Fail to Meet Availability Requiremen

“Consequence ”

WEAK RISK STATEMENTS

Makes an overly general observation:

- ***Weak:*** *If the high vacancy rate in engineering staff persists, then the program staffing will be inadequate.*
- ***Stronger:*** *If the high vacancy rate in software engineering staff persists due to aggressive recruiting by competitors, then the commitment to deliver first software builds in 6 months will not be met.*

Identifies an issue rather than a risk:

- ***Weak:*** *Fatigue cracks discovered in already produced vehicles may shorten service life unless remedied.*

Diverts focus from the program's controllable activities:

- ***Weak:*** *If the program's funding is withheld due to poor test results, then the program schedule will be jeopardized.*
- ***Stronger:*** *If the vehicle reliability test performance is below XX MTBF during test, then the resulting schedule delay to fix failures could jeopardize FY 2018 funding.*

RISK STATEMENT FORMS

a) IF (some event) THEN (some consequence)

b) WE MIGHT NOT (some promise) BECAUSE (some reason)

c) THERE IS (some probability) THAT (some risk event) MAY OCCUR, RESULTING IN (some consequence),

(optional) BECAUSE (some reason)

ANALYZING RISK:

WHAT DO RISKS MEAN?

Estimate Likelihood/Consequence

- Technical Performance
- Schedule
- Cost

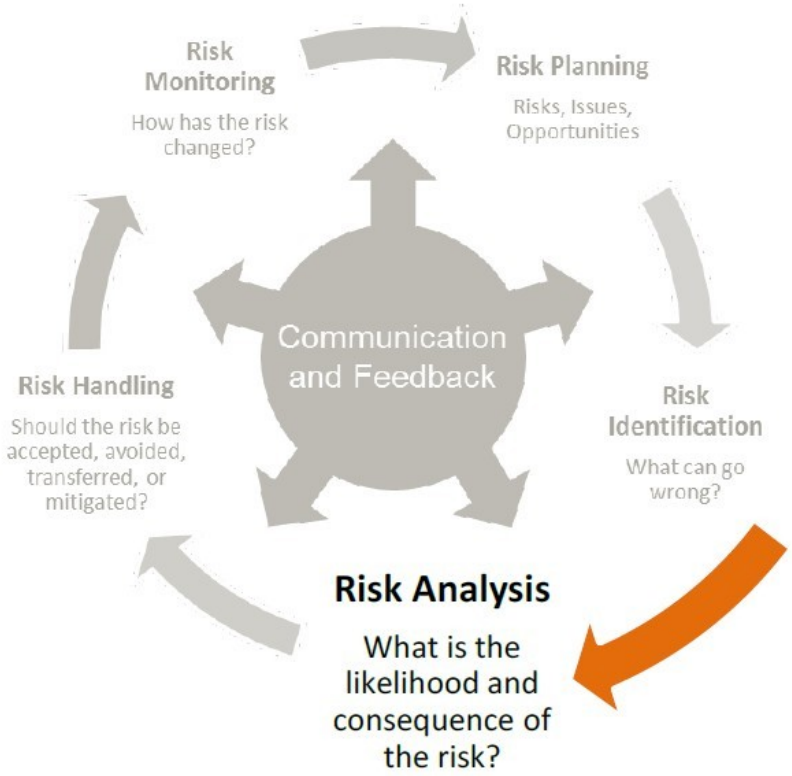
Determine the Risk Level

- Use consistent predefined likelihood and consequence criteria

Government and Contractor should use common framework

Use Quantitative Data when

ANALYZING RISK:



When analyzing risks:

- Quantify the cost, schedule, and performance impacts:
  - RDT&E costs
  - Procurement costs
  - O&S costs
  - Performance thresholds
  - Schedule thresholds
- Assess the likelihood of the risk being realized
- Conduct analysis periodically to support cost, schedule, and performance risk assessments

CONSEQUENCE CRITERIA

Level	Cost			Schedule	Performance
	RDT&E	Procurement	Operations & Maintenance/Sustainment		
5	Major impact. 10% or greater increase over APB threshold; or >$D. Management reserve depleted.	Major impact. Budget or unit production cost (e.g., APUC) increasing to a significant Nunn-McCurdy breach; or increase of more than $XX in programmed dollars (POM)	Costs exceed life cycle ownership cost by 10%.. Ability to sustain system in jeopardy.	Schedule slip that requires a major schedule re-baselining; precludes program from meeting its APB schedule objectives by more than 6 months; negative float to program completion	Severe degradation precludes system from meeting a KPP or key technical/supportability threshold; will jeopardize program success; design or supportability margins exceeded; unable to meet mission objectives (defined in mission threads, ConOps, OMS/MP)
4	Significant impact. 5% -<10% increase over APB threshold; or $C-≤$D. Requires use of significant management reserves.	Significant impact. Costs that drive a unit production cost (e.g., APUC) increasing to an APB threshold breach of $C - ≤ $D; or increase of $YY-XX in programmed dollars (POM)	Costs drive increase of more than z% over program's lifecycle cost estimate; costs drive program to exceed life cycle ownership cost KSA.	Significantly impacts ability to meet planned milestones and/or other key dates. Established acquisition decision points or milestones will be delayed, impacting APB schedule objectives by less than 6 months. Slip puts funding at risk; <5% float to major milestones or program completion	Significant degradation impairs ability to meet a KSA; Technical design or supportability margin exhausted in key areas; able to meet one or more mission tasks . (defined in mission threads, ConOps, OMS/MP); workarounds required to meet mission objectives
3	Moderate impact. 3% -<5% increase over APB threshold; or $B - ≤ $C; manageable with reserves; inability to meet key cost metrics	Moderate impact. Costs that drive unit production cost (e.g., APUC) increase of $B -≤ $C; or $ZZ-YY in programmed dollars (POM); inability to meet key cost metrics	Costs drive increase of y - z% over program's lifecycle cost estimate or within 2% of life cycle ownership cost KSA; inability to meet key cost metrics	Minor schedule slip, able to meet key milestones. Total program float decreased by X-Y% with float remaining positive, but nearly consumed; <10% float to major milestones or program completion; inability to meet key schedule metrics	Moderate reduction in technical performance or supportability, unable to meet lower tier attributes (e.g. PAs); planned design or supportability margins reduced; inability to meet key TPMs, CTPs; . Workarounds required to achieve mission tasks (defined in mission threads, ConOps, OMS/MP)
2	Minor impact. 1% - <3% increase over APB threshold; or $A- ≤ $B; exceeding cost metrics tripwires	Minor impact. Costs that drive unit production cost (e.g., APUC) increase of $A-≤ $B; or $AA-ZZ in programmed dollars (POM); exceeding cost metrics tripwires	Costs drive increase of x- y% over program's lifecycle cost estimate; exceeding cost metrics tripwires	Able to meet key dates. Total program float decreased by less than X%, with 10% or greater positive float remaining.; exceeding schedule metrics tripwires	Minor reduction in technical performance or supportability; can be tolerated with little or no impact on program objectives. Design margins will be reduced, but within limits / tradespace; exceeding key TPMs, CTPs tripwires
1	Minimal impact. <1% increase over APB threshold; or <$A. Costs expected to meet approved funding levels, not projected to increase above thresholds	Minimal impact. Costs that drive APUC increase of ≤ $A ; or less than $AA in programmed dollars (POM). Costs expected to meet approved funding levels, not projected to increase above thresholds	Costs drive increase of ≤$x% over program's lifecycle cost estimate.	Minimal or no schedule impact.	Minimal or no consequences to meeting technical performance or supportability requirements. Design margins will be met; margin to planned tripwires.

Tailored to program - Programs can break out cost or consolidate

LIKELIHOOD CRITERIA

Table 3-2. Recommended Likelihood

Level	Likelihood	Probability of Occurrence
5	Near Certainty	> 80% to ≤ 99%
4	Highly Likely	> 60% to ≤ 80%
3	Likely	> 40% to ≤ 60%
2	Low Likelihood	> 20% to ≤ 40%
1	Not Likely	> 1% to ≤ 20%

Specific Criteria Recommended

RISK ANALYSIS

Risks can be characterized as

HIGH, MODERATE, or LOW

MODERATE, or **LOW**

based on predetermined rating thresholds.

Risk Level is calculated for each risk and serves as the means to rank the program risk.

This difficult but important step in the risk management process helps the program determine resource allocation and the appropriate mitigation strategy.

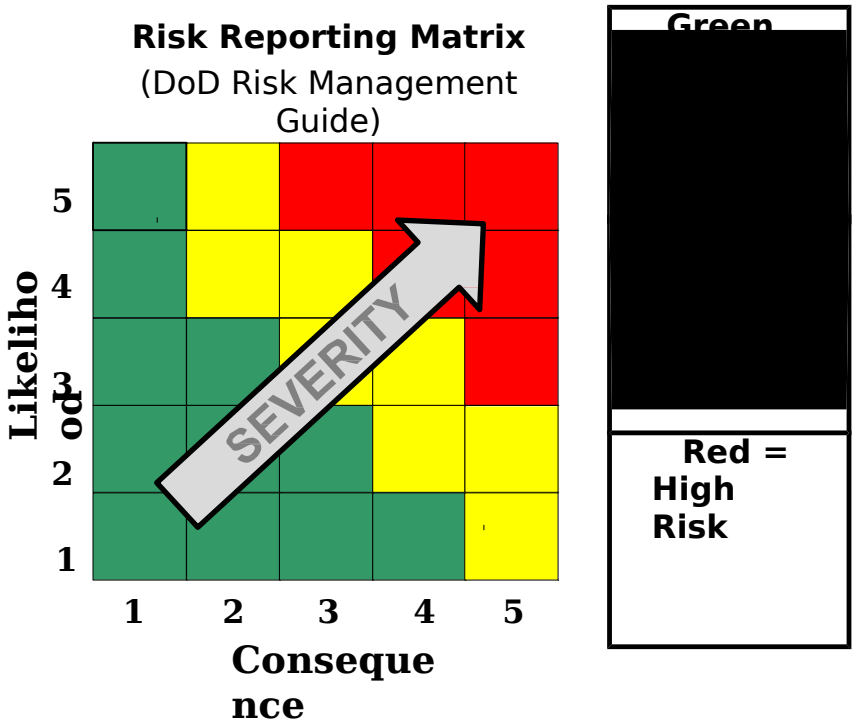
RISK ANALYSIS

How big is the Risk? and What are the Likelihood and Consequence should it occur?

Assess Consequence Analyze the possible consequences in terms of technical, schedule, cost (RDT&E, Procurement and O&M)

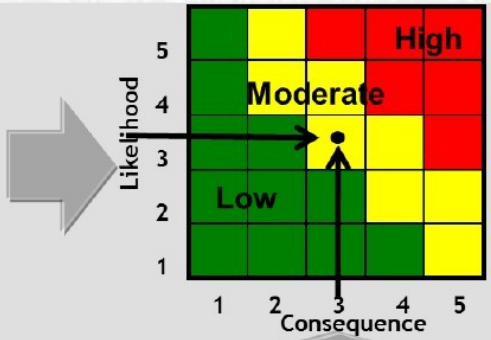
Assess Likelihood of occurrence Identify the risk

Risk Reporting Matrix is the same in both DoD RMG v6.0 and DoD ROIMG



DOD RISK REPORTING MATRIX

Level	Likelihood	Probability of Occurrence
1	Not Likely	> 1% to ≤ 20%
2	Low Likelihood	> 20% to ≤ 40%
3	Likely	>40% to ≤ 60%
4	Highly Likely	>60% to ≤ 80%
5	Near Certainty	> 80% to ≤ 99%



Level	Cost			Schedule	Performance
	RDT&E	Procurement	Operations & Maintenance		
1	Minimal impact: <1% increase over most recent cost estimate; or; <$A dollars	Minimal impact: < $A or < 1% of budget	Minimal or no impact on O&M	Minimal or no impact	Minimal or no consequences to meeting technical performance or supportability requirements Design margins will still be met
2	Minor impact: 1% - <3% increase over most recent cost estimate; or, $A - ≤ $B	Minor impact: 1% - <3% increase over unit production cost baseline; or, $A - ≤ $B	Increase of x- y% over program's cost estimate	Able to meet key dates. Does not significantly decrease program total float	Minor reduction in technical performance or supportability; can be tolerated with little or no impact on program. Design margins will be reduced, but within acceptable limits
3	Moderate impact: 3% -<5% increase over most recent cost estimate; or, $B - ≤ $C; manageable with reserves	Moderate impact: 3% -<5% increase over unit production cost baseline; or, $B - ≤ $C; or 1/10 of significant Nunn-McCurdy (N-M) breach	Increase of y - z% over program's cost estimate	Minor schedule slip. Able to meet key milestones. Significantly decreasing program total float. Impacting the critical path	Moderate reduction in technical performance or supportability with limited impact on program objectives. Design or supportability margins are significantly reduced and jeopardize achieving performance threshold
4	Significant impact: 5% -<10% increase over most recent cost estimate; or $C - <$D; Requires use of significant management reserves	Moderate impact: 5% -<8% increase over unit production cost baseline; or, $C - ≤ $D; or 1/5 of significant N-M breach	Increase of more than z % over program's cost estimate or within 2% of lifecycle ownership cost KSA	Significantly impacts ability to meet milestone dates and/or other key dates. Significantly impacts ability to meet the program or project completion date. Schedule slip puts funding at risk	Significant degradation in technical performance or major shortfall in supportability; cannot meet a KSA; may jeopardize program success No technical design or supportability margins available
5	Major impact. 10% or greater increase over cost estimate; or >$D. Program success in jeopardy	Major impact: 8% or more increase over unit production cost baseline; or, >$D or; 1/2 of a significant N-M breach)	Exceeds lifecycle ownership cost KSA. Ability to sustain system in jeopardy	Schedule slip that requires a major schedule re-baselining; Failing to meet milestone dates and/or other key dates; Failing to meet the program or project completion date	Severe degradation in technical performance or supportability; cannot meet KPP or key technical/supportability threshold; Will jeopardize program success

EXPECTED MONETARY VALUE

Risk	Likelihood	Consequence Cost	Exposure	Cost to Handle	Return on Investment
Risk 1:	20%	$10M	$2M	$1M	$1M
Risk 2:	70%	$10M	$7M	$1M	$6M
Risk 3:	40%	$36M	$9M	$2M	$7M
Risk 4:	60%	$5M	$3M	$.5M	$2.5M
Total		**$61M**	**$21M**	**$4.5M**	

Programs should compare cost burdened risk and cost of handling strategies.

Cost exposure of a risk can be expressed as its EMV, which is the likelihood of the risk multiplied by the cost consequence of the risk if realized.

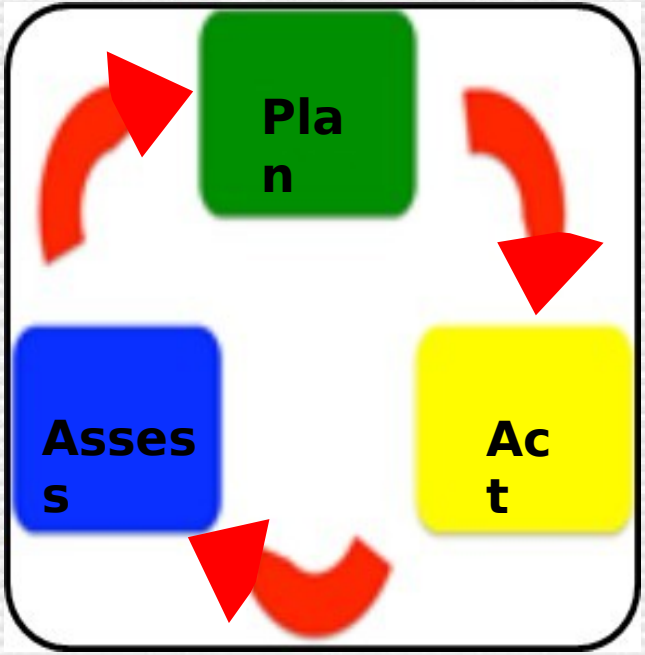
Cost of the risk handling effort is then subtracted from the risk exposure to determine the “likely” return on investment (ROI).

RISK ANALYSIS EXPECTATIONS

Expectations:

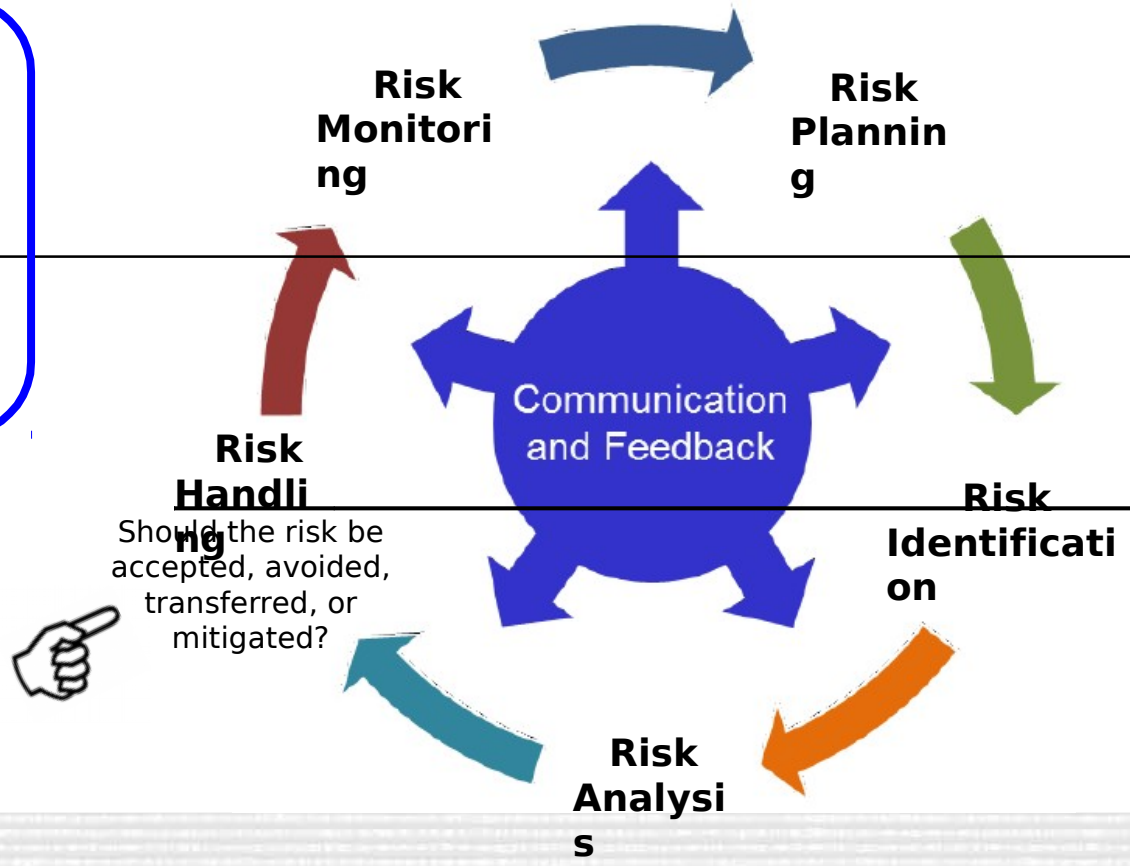
- Risk statements and descriptions fully document events that could adversely affect a program's ability to meet cost, schedule, and performance objectives or baselines.
- Risk statements are clearly written using an "if–then" or similar construct.
- Programs use established criteria, tailored only as necessary, to provide a consistent means for evaluating risks.
- Resulting likelihood and consequence ratings should be supported by data and analysis.
- Programs conduct periodic risk analyses to update risk estimates and to align and support other program activities such as EVM, IMS, and technical reviews.
- If the analyzed likelihood is 100 percent, the program should address the event or condition as an issue rather than a risk.

Risk Handling



RISK HANDLING

DoD RMG v6
2005



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RISK HANDLING

- **Consider the accept, avoid, and transfer handling options, not just the mitigation option**
- **Choose the best handling option, then select the best implementation approach for the option**
- **Take into consideration elevating the risk to appropriate tiers (executive, management, or working level)**
- **Include cross-program risks in order to consider the impact of risk management actions on other programs**

RISK HANDLING APPROACH

- The selected mitigation approaches for program- level risks should be reflected in the program's Acquisition Strategy
- Include the specifics of ***what*** should be done,
- ***when*** it should be accomplished,
- ***who*** is responsible,
- the **c**ost and **s**chedule **i**mpact, and
- the ***funding/resources*** required to implement the risk mitigation plan

FOUR FUNDAMENTAL STRATEGIES

Avoid

Eliminate the risk event or condition

Mitigate (Control)

Actively reduce risk to an acceptable level

Assume (Accept)

Accept the level of risk, but continuing on the current program plan

Transfer

Transfer to another entity

RMB ACTIONS

Risk Management Board (RMB) should compile a list of criteria that answers questions such as:

- Is the approach feasible in implementation?
- Are the expectations realistic in effectively reducing program risk to an acceptable level?
- Is the approach affordable in terms of dollars and resources?
- Is adequate time available to develop and implement the approach?
- What impact do these approaches have on the overall program schedule?
- What impact will the mitigation approach have on the technical performance of the system?

RISK MITIGATION IMPLEMENTATION

RM Implementation

- Directing the teams to execute the defined and approved risk control plans
- Applying resources (manpower, schedule, budget) to reduce the likelihood and/or consequence of risks
- Tracking resource expenditure, technical progress, and risk impacts (benefits)

Reduces Program Risks

- Providing a coordination vehicle with management and other stakeholders
- Outlining the risk reporting requirements for ongoing monitoring, to include “trip wires” which warrant elevating the risk to the next management level
- Documenting the change history
- Providing information to further enhance risk tracking and risk communication

RISK MITIGATION APPROACHES

RISK BURN-DOWN

Burn-down plan consists of 6 steps, tied to the project schedule, that allow the program to control and retire risks

1. Identify risk start and end points on a graph
2. Assign numerical values to these points
3. Identify activities that will burn-down risk
4. Estimate the time basis for these activities
5. Estimate their relative risk burn-down contribution

RISK PILE

MORE BURN DOWN CONSIDERATIONS

- Ensure all risk handling activities
  - (1) are clearly defined and jargon free,
  - (2) are objective and not subjective, and
  - (3) have specific, measurable outcomes. For example, the statement
- Assign a planned likelihood and consequence value to each risk handling activity.
  - Not all handling activities will result in a score change or burn-down of the risk but are necessary to track the progress of the burn-down plan (e.g., meetings do not mitigate risks, results do).

RISK HANDLING?

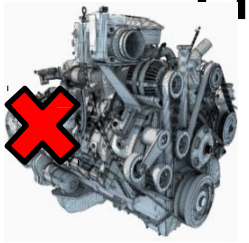
Why ?

Meet Availability Requirements

Mitigate?

Not My Problem

Change Availability Requirement

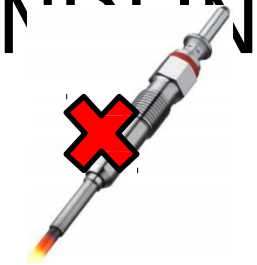


Why ?

Engine Does Not Start

Mitigat

Start Engine in Warmed Shelter



Why ?

Glow Plug Failure

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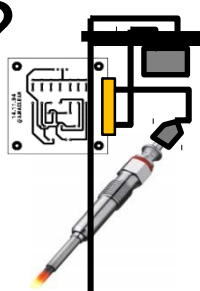
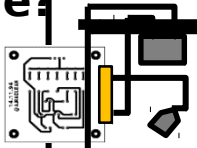
More Spare Glow



Why ?

Glow Plug Remains On After Start

Mitigate?



Circuit Redesign

Why ?

Counterfeit Circuit Boards

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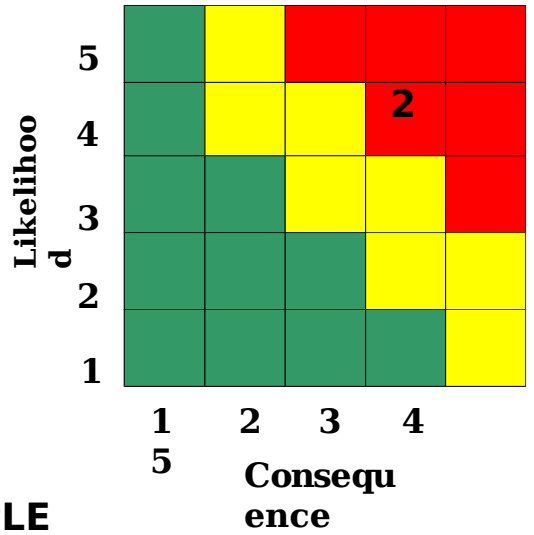
Certified Supplie

RISK MITIGATION PLAN EXAMPLE

Identify, evaluate, and select detailed steps that will drive risk to an acceptable level given program constraints and objectives

1. Get new/detailed Program A and SW schedules
2. Identify insertion points for SW updates
3. Work with SW contractor to improve schedule
4. Incentivize SW lab construction for
7. Improve SW schedule by 2 months
5. Identify cause of SW technical issues
6. Correct SW technical issues
8. Improve SW lab construction by 1 month
9. New SW dates coordinated with Program A leadership



EXAMPLE

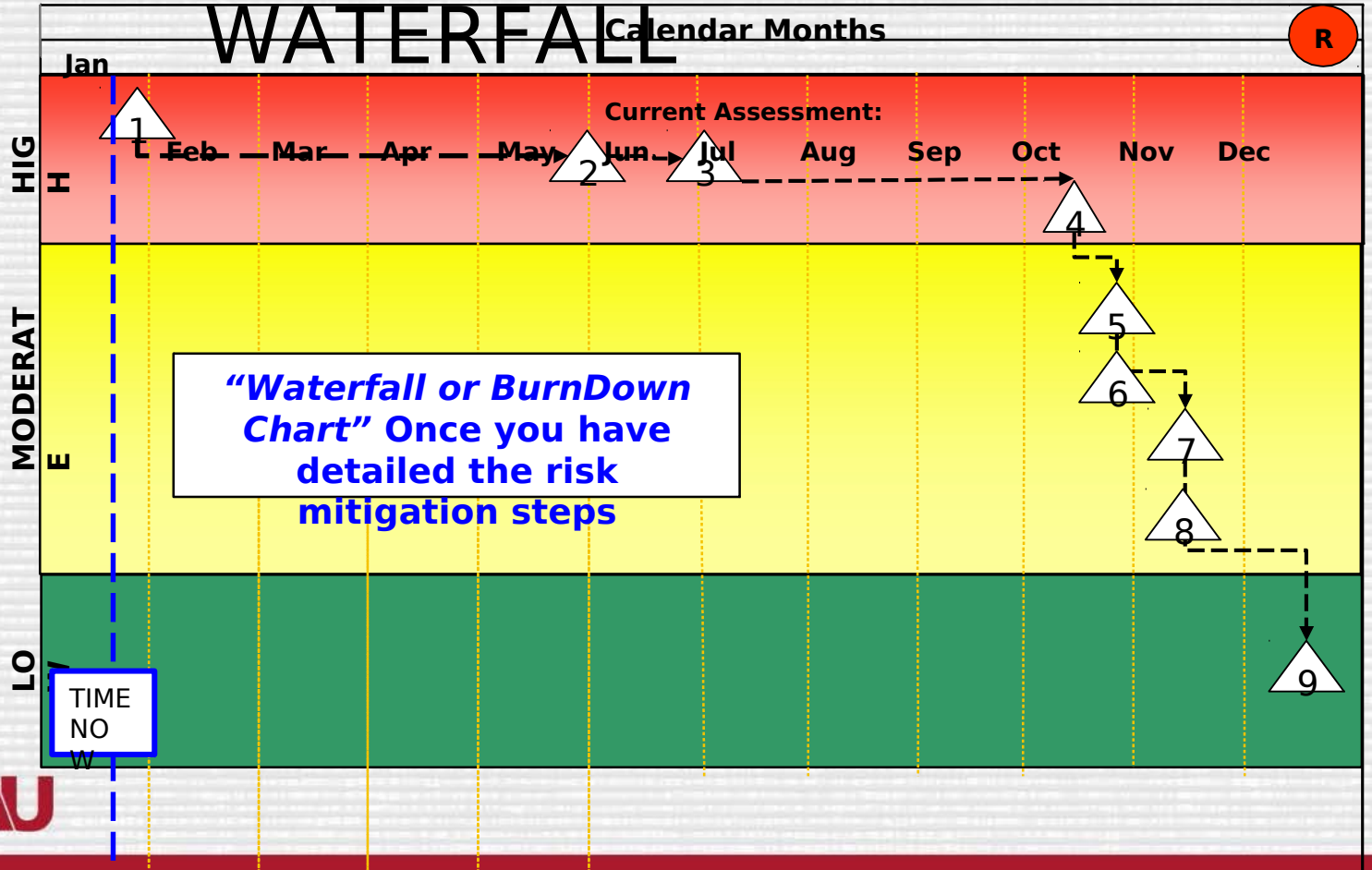
Risk #2: If the timeline established for Program A's production is not met because of a delay in receiving software updates, then there will be a program slip of at least 4 months.

RISK MITIGATION PLAN EXAMPLE

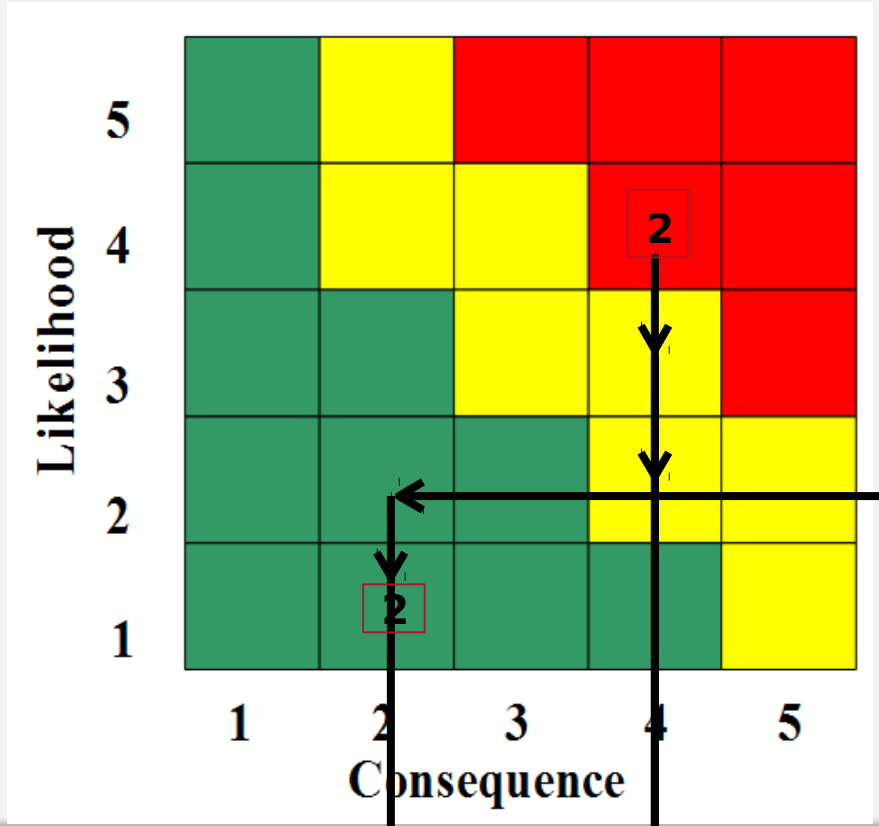
Include the specifics of what should be done, when it should be accomplished, who is responsible, and funding required to implement mitigation strategy

	When?	**Who?**	**Funding?**
1. Get new/detailed Program A and SW schedules	Jan 12	CC Tech Dir	Yes
2. Identify insertion points for SW updates	May 12	Yes	You?
3. Work with SW contractor to improve schedule	July 12	x	No x
4. Incentivize SW lab construction for on-time SW delivery	Oct 12 x		No x
5. Identify root cause of SW technical issues			x x
6. Correct SW technical issues			x
7. Improve schedule by 2 months	x	x	x
8. Improve SW lab construction by 1 month	x	x	x
9. New SW dates coordinated with Program A leadership			

MITIGATION TRACKING TOOL BURNDOWN or WATERFALL



RISK MATRIX TEMPLATE



Adjust Risk Matrix Expectation consistent with Mitigation Planning

RISK MONITORING (TRACKING)

RISK MONITORING (TRACKING)

Answers the question: *"How have the risks changed?"*

A means to systematically **track** and **evaluate** risk handling plans against established metrics throughout the acquisition process

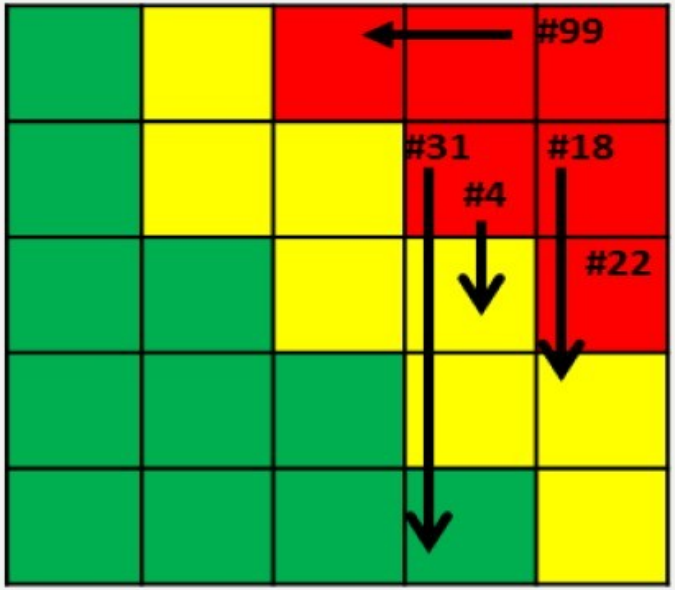
Iterative and **recursive** - feeds info back thru risk handling, risk analysis, risk identification, and risk mgt planning steps as warranted

RISK MONITORING

When Monitoring Risks:

- Track the implementation and progress of the risk handling
- TPMs are an integral risk monitoring activity
- Conduct regular status updates to monitor risks for changes to likelihood and/or consequences
- Document active risks as well as those that can be retired - prevent unnoticed relapse of retired risks
- Keep lines of communication open to notify management when ability to handle the risk is ineffective

EXAMPLE RISK MONITORING AND TREND MATRIX



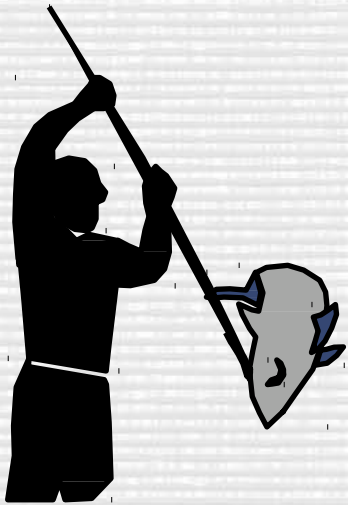
Risk No	Risk Item Description	Risk Trend
31	Risk Title	↓
4	Risk Title	↓
18	Risk Title	↓
99	Risk Title	←
22	Risk Title	Retired

↓ = Likelihood decreasing
↑ = Likelihood increasing
← = Consequence decreasing
New = New risk added
Retired = Retired since last report

RISK MONITORING EXPECTATIONS

Expectations

- The program team conducts regular status updates to monitor risks for any changes to likelihood or consequence, as well as earned value (cost variance), TPMs, and variation in schedule as a result of program progress.
- PMOs and contractors establish a regular schedule for reviewing risks.
- Team alerts management when risk handling plans should be implemented or adjusted.
- Alert the next level of management when ability to handle a risk exceeds the lower level's authority or resources.



- Program team tracks actual versus planned implementation of progress against the risk handling plan.
- Program establishes a management indicator system over the entire program to monitor risk activity.
- Program reviews closed risks periodically to ensure their risk level has not changed.

RISK BURN-DOWN

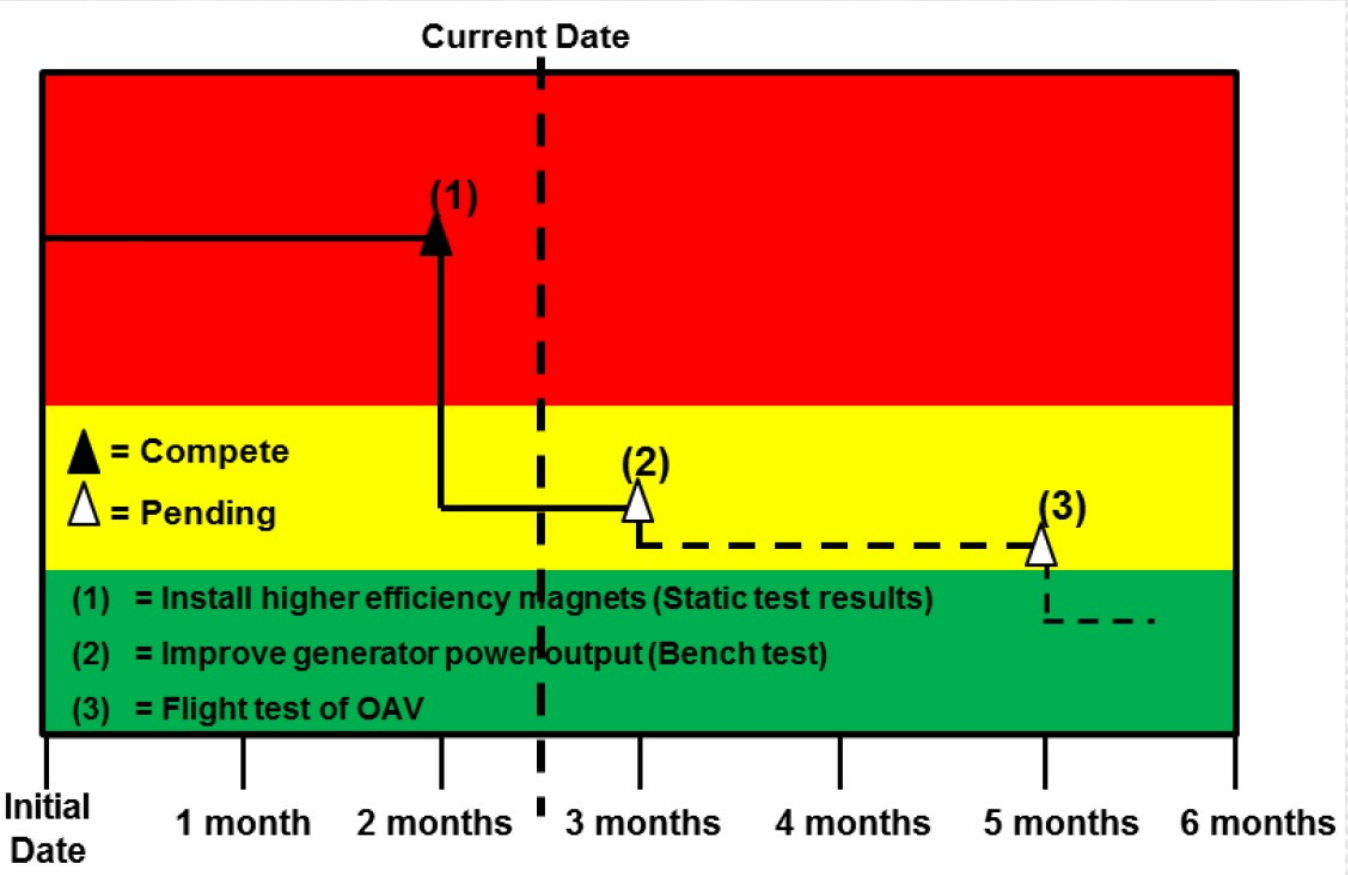


Figure 3-9. Risk Burn-Down

Issue Management

Issue Management

Issue Monitoring
How has the issue changed?
Issue Planning
What is the program's issue management process?
Communication and Feedback
Issue Handling
Should the issue be accepted, avoided, transferred, or mitigated?
Issue Identification
What has or will go wrong?
Issue Analysis
What is the consequence of the issue?

Figure 5-1. Issue Management Process

Issues vs Risks

- Risks are potential future events
- An issue is an event or situation with negative consequences that has already occurred or is ***certain*** to occur
- This distinction between an issue and a risk differentiates how they are managed

Risks and Issues

- **Risks: Future Problems; Focus is on Future Consequences**
  - Can be "closed" only after successful handling through avoiding, mitigating, transferring, or accepting (assuming) the risk
  - Examples
    - IF the sole source provider of a critical component goes out of business, THEN the program will be delayed by 6 months
    - IF proprietary interfaces are used, THEN maintenance and support costs will likely increase as the program matures

- **Issues: Current Problems: Focus is on Real-Time Consequences**
  - If the probability of occurrence is "near certainty" or if it has already occurred, it's an issue
  - Examples
    - Release of engineering drawings is behind schedul
    - Test failure of components reveals a design shortfall

Issue Management

Scope

- Issue management… …applies resources to address and resolve the consequences associated with a past, present, or certain future event. Programs also should assess whether issues may create additional potential risks, and evaluate them accordingly.

- Issue management and opportunity management (Section 6) are complementary to the risk management process (Section 3). Programs should take advantage of the common practices between issue and risk management while recognizing and accounting for the distinctive characteristics of each.

Issue Management

- The key is to ensure proper focus on both issues and risks so that attention on current problems will not overtake efforts to manage risks and opportunities

ISSUE REPORTING

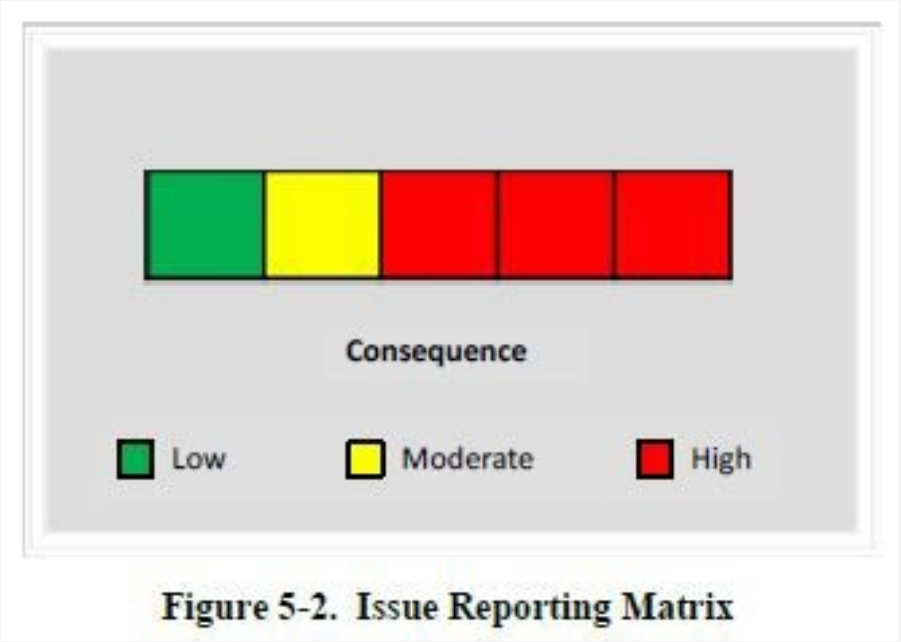


Figure 5-2. Issue Reporting Matrix

- **Approved issues should be analyzed using the program's risk management consequence criteria**
- **The program should evaluate the handling options in terms of cost, schedule, performance, and residual risk,**

Issue Management handling options

Handling (or corrective action) plans should be developed for high issues and moderate issues as appropriate

- **Accept** – Accept the consequence of the issue based on results of the cost/schedule/ performance business case analysis.
- **Avoid** – Eliminate the consequence of the event or condition by taking an alternate path. Examples may involve changing a requirement, specification, design, or operating procedure.
- **Transfer** – Reassign or reallocate the issue responsibility from one program to another, between the government and the prime contractor, within government agencies, or even across two sides of an interface managed by the same organization.
- **Mitigate** – Implement a strategy to reduce the issue consequences and residual risk to as low as possible or minimize its impact on the program.

Issue Tracking (Monitoring)

The program should track resolution of issues against the issue handling plan the program office should

- (1) monitor the issue to collect actual versus planned cost, schedule, and performance information;
- (2) feed this information back to the previous process steps
- (3) adjust the handling plan (or POA&M) as warranted;
- (4) analyze potential changes in the issue level; and
- (5) examine potential changes in the issue along with potential associated

This update information should be included in the program's issue tracking register.

Issue	Consequence	Type T/B/P	Plan of Action and Milestones			
			Closure Activities	Closure Date Planned (P) Actual (A)	Cost Type (RDT&E, Procurement, O&M)	Cost Amount ($)
Issue X (Describe the issue that has occurred or will occur, the type of issue, technical, business, or programmatic, and what are the resulting cost, schedule, and performance consequences)		Tech (T)		(P) – 10/12/13		
			Activity 1	(A) - 11/1/13	RDT&E	$420K
				(P)		
			Activity 2	(A)	Procurement	$2.1M
				(P)		
			Activity 3	(A)		
				(P)		
				(A)		
				(P)		
				(A)		
				(P)		
				(A)		
				(P)		
				(A)		
				(P)		
				(A)		
				(P)		
				(A)		

Figure 5-3. Issue Tracking Register

Issue Management Boards

- Programs should establish a separate Issue Management Board, but may evaluate whether separate boards are necessary.

Issue Management *Expectations*

Expectations

- Programs should not confuse issues with risks. Both have consequences, but with issues the probability = 1 as they have already occurred or are certain to occur.
- Issues are assessed for residual risks and formal risks are established as appropriate.
- Programs document an issue management process. This process may share elements with the risk management process, while respecting differences.
- Programs develop a plan to address, track, and review issues during regular meetings and reviews.
- Programs track cost, schedule. and performance issues and report to the appropriate management level based upon the level of *the* consequence impacts.

Opportunity Management

OPPORTUNITY MANAGEMENT OVERVIEW

Through the opportunity management process, the program identifies potential enhancements to cost, schedule, and/or performance.

Opportunity management measures potential program improvement in terms of likelihood and benefits.

- **Opportunities should be evaluated for both advantages and disadvantages**
  - opportunity may be overstated and corresponding risks may be understated
  - all candidate opportunities should be thoroughly screened

OPPORTUNITY MANAGEMENT

Scope

Opportunity management, like issue management, should be considered as complementary to risk management (Section 3). Program personnel should use opportunity management to

- Plan
- Identify
- Analyze
- Handle
  - Monitor initiatives that yield potential program cost reductions, schedule reductions, and/or performance improvements.

OPPORTUNITY FORECASTING

Identifying opportunities starts with forecasting potential enhancements within the program’s technical mission and stakeholder objectives.

As opportunities emerge, the program can shift focus toward understanding how to take advantage of opportunities while continuing to manage risks and issues.

Opportunity management measures potential program improvement in terms of likelihood and benefits.

OPPORTUNITY MANAGEMENT PURPOSE

Opportunities Help Deliver Should-Cost Objectives

OPPORTUNITY MANAGEMENT PROCESS

Opportunity Monitoring
How has the opportunity changed?
Opportunity Planning
What is the program's opportunity management process?
Communication and Feedback
Opportunity Identification
What can be improved?
Opportunity Analysis
What is the business case analysis of the opportunity?
Opportunity Handling
Should the opportunity be pursued, reevaluated, or rejected?

OPPORTUNITY IDENTIFICATION

Opportunity Identification:

- Identifying opportunities starts with forecasting potential enhancements within the program's technical mission and stakeholder objectives.

identified before program execution and should be sought across the program life cycle

- system and program changes that yield reductions in total ownership cost.
  - For example, adherence to a modular open systems approach or securing appropriate government rights to a technical data package can offer opportunities in sparing and competition for modifications.

OPPORTUNITY SOURCES

Important sources of opportunities include system and program changes that yield reductions in total ownership cost.

- For example, adherence to a modular open systems approach or securing appropriate government rights to a technical data package can offer opportunities in sparing and competition for modifications.

These cost reductions can be in:

- RDT&E,
- production, and
- operations and maintenance (O&M) dollars throughout the life cycle.

RISK VS OPPORTUNITY MANAGEMENT BOARD

Risk Management Board (RMB) or separate Opportunity Management Board

Once candidate opportunities are identified, the program RMB should:

- examine the
- opportunity assign
- an owner, and
- track it in the opportunity register

OPPORTUNITY ANALYSIS

Opportunity Analysis:

- perform a cost, schedule, and performance benefit analysis for each approved opportunity
- Opportunities with sufficient potential should be evaluated relative to potential handling options.

Applying resources to evaluate and implement opportunities may reduce available risk handling resources

Must be balanced against the potential likelihood of achieving the desired benefits, and the degree of value added in meeting existing program requirements.

OPPORTUNITY HANDLING

Handling options should be evaluated in terms of cost, schedule, and performance potential benefits and risk, and the best option is selected. These handling options include:

Pursue – Fund and implement a plan to realize the opportunity. (Determination of whether to pursue the opportunity will include evaluation of when the opportunity would be realized, the cost, additional resources required, risk, and time to capture.)

Reevaluate – Continuously evaluate the opportunity for changes in circumstances.

Reject – Intentionally ignore an opportunity due to cost, technical readiness, resources, schedule burden, and/or low probability of successful capture.

OPPORTUNITY MONITORING

Opportunity Monitoring:

collect actual versus planned cost, performance, schedule, and benefit information

feed this information back to the prior process

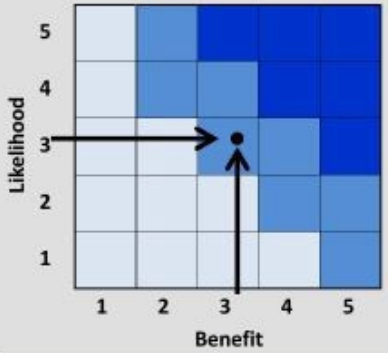
steps, adjust the handling plan as warranted,

analyze potential changes in the opportunity level,

examine potential risks and additional opportunities that may be identified.

OPPORTUNITY MANAGEMENT SAMPLE

Level	Likelihood	Probability of Occurrence
5	Near Certainty	> 80% to ≤ 99%
4	Highly Likely	> 60% to ≤ 80%
3	Likely	> 40% to ≤ 60%
2	Low Likelihood	> 20% to ≤ 40%
1	Not Likely	> 1% to ≤ 20%



Level	Cost			Schedule	Performance
	RDT&E	Procurement	Operations & Maintenance		
5	Significant cost benefit of >$W; or reduces costs by >q% of budget	Significant cost benefit of >$D or; reduces production unit cost by >q%	Significant cost benefit for O&M savings	Exceptional benefit in meeting major milestones and improving critical path	Exceptional benefit to design margin, system performance and requirements
4	Major cost benefit $Z - <$W; or reduces costs by p% - <q% of budget	Major cost benefit of $C - <$D or; reduces production unit cost by p% - <q%	Major cost benefit for O&M savings	Major benefit in meeting major milestones and improving critical path	Major benefit to design margin, system performance or requirements
3	Cost benefit of $Y - <$Z; or reduces costs by n%- <p% of budget	Moderate cost benefit of $B - <$C or; reduces production unit cost by n% - <p%	Moderate Cost benefit for O&M savings	Moderate benefit in meeting major milestones	Moderate benefit to design margin, system performance or requirements
2	Minor cost benefit of $X - <$Y; or reduces costs by m%- <n% of budget	Minor cost benefit of $A - <$B or; reduces production unit cost by m%- <n%	Minor cost benefit for O&M savings	Minor benefit in meeting lower level milestones	Minor benefit to design margin, system performance or requirements
1	Minimal cost benefit of <$X; or reduces costs by <m% of budget	Minimal cost benefit of <$A or; reduces production unit cost by <.5%	Minimal cost benefit for O&M savings	Minimal benefit to improving overall schedule	Negligible benefit to design margin, system performance or requirements

OPPORTUNITY MANAGEMENT EXPECTATIONS

Expectations

- **PMs use opportunity management to plan, identify, analyze, handle, and monitor initiatives that potentially yield improvements in the cost, schedule, and/or performance baseline.**
- **PMs evaluate and actively pursue selected opportunities to improve the program cost, schedule, and performance baselines.**
- **PMs review risks, issues, and opportunities during regular program meetings.**
- **Programs establish or integrate opportunity tracking registers and Opportunity Management Boards.**
- **Programs establish opportunity likelihood and benefit criteria in line with program "should-cost" objectives.**
- **Programs evaluate approved opportunity and manage any associated risks.**

DAU RM WORKSHOP OVERVIEW

Risk Management Overview Risk Management Process

- Planning
- Identification
- Analysis
- Handling (Mitigation)
- Monitoring (Tracking)
- Tools

Issue Management

Opportunity Management Next Steps

DAU Risk Management Workshop

NOTIONAL AGENDA

Intro	Risk **Cluture**	Risk **Planning**	Lunch	Risk ID Part 1	Risk ID Part 2

Risk Analysis	Risk Handlin g Part 1	Lunch	Risk **Handling** Part 2	Risk **Monitoring**	Ris k Tool s

Intended to use actual Program Data with Intact Teams to jump-start / invigorate Risk Management activities to enable program success.

QUESTIONS